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AUG 02 2006

Application No. 10/083,967

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1. (Currently Amended) An optical structure comprising ~~an interface between~~ a first optical material and a second optical material each of which comprises a polymer with the first optical material having an interface with the second optical material, the first optical material comprising a polymer-inorganic particle blend and the second optical material comprising a polymer-inorganic particle blend, wherein the blend comprises inorganic particles and wherein the first optical material has a different index-of-refraction than the second optical material at infrared, visible or ultraviolet wavelengths and wherein the index-of-refraction of the first optical material varies spatially due to changes in the particle loadings, changes in inorganic particle composition or both.
2. (Currently Amended) The optical structure of claim 1 wherein the two materials differ in values of index-of-refraction between each other by at least about 0.005 at infrared, visible or ultraviolet wavelengths.
3. (Currently Amended) The optical structure of claim 1 wherein the two materials differ in values of index-of-refraction between each other by at least about 0.1 at infrared, visible or ultraviolet wavelengths.

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4. (Currently Amended) [[The]] An optical structure of claim 1 comprising a first optical material and a second optical material each of which comprises a polymer with the first optical material having an interface with the second optical material, the first optical material comprising a polymer-inorganic particle blend and the second optical material comprising a polymer-inorganic particle blend, wherein the blend comprises inorganic particles, wherein the first optical material has a different index-of-refraction than the second optical material at infrared, visible or ultraviolet wavelengths and wherein the polymer-inorganic particle blend has a non-linear optical response at infrared, visible or ultraviolet wavelengths.

5. (Original) The optical structure of claim 1 wherein the polymer-inorganic particle blend comprises a polymer-inorganic particle mixture.

6. (Original) The optical structure of claim 1 wherein the polymer-inorganic particle blend comprises a polymer-inorganic particle composite.

7. (Original) The optical structure of claim 1 wherein the polymer inorganic-particle blend comprises inorganic particles comprising elemental metal or elemental metalloid, i.e. un-ionized elements, metal/metalloid oxides, metal/metalloid nitrides, metal/metalloid carbides, metal/metalloid sulfides or combinations thereof.

8. (Original) The optical structure of claim 1 wherein the polymer inorganic-particle blend comprises a polymer selected from the group consisting of polyamides (nylons), polyimides, polycarbonates, polyurethanes, polyacrylonitrile, polyacrylic acid, polyacrylates, polyacrylamides,

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polyvinyl alcohol, polyvinyl chloride, heterocyclic polymers, polyesters, modified polyolefins, polysilanes, polysiloxane (silicone) polymers, and copolymers and mixtures thereof.

9. (Cancelled)

10. (Original) The optical structure of claim 1 wherein the second optical material comprises no more than about 5 weight percent inorganic particles.

11. (Original) The optical structure of claim 1 wherein the second optical material comprises at least about 10 weight percent inorganic particles.

12. (Original) The optical structure of claim 1 wherein the first optical material comprises at least about 10 weight percent inorganic particles.

13. (Original) The optical structure of claim 1 wherein the first optical material comprises at least about 25 weight percent inorganic particles.

14. (Original) The optical structure of claim 1 wherein the inorganic particles have an average particle size of no more than about 1 micron.

15. (Original) The optical structure of claim 1 wherein the inorganic particles comprises metal/metalloid oxide particles.

16. (Currently Amended) [[A]] The optical structure of claim 1 comprising an interface between a first material and a second material each of which comprises a polymer, the first

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~~material comprising a polymer inorganic particle composite, wherein the composite blend comprises inorganic particles and wherein the inorganic particles have an average particle size of no more than about 1 micron and wherein essentially no inorganic particles have a diameter greater than about five times the average particle diameter and wherein the inorganic particles comprise metal oxide.~~

17. (Original) The structure of claim 16 wherein the inorganic particles are electrically conducting.

18.-20 (Canceled)

21. (Currently Amended) The structure of claim [[16]] 4 wherein the inorganic particles have an average particle size of no more than about 500 nm.

22. (Currently Amended) The structure of claim [[16]] 4 wherein the inorganic particles have an average particle size of no more than about 100 nm.

23. -77. (Canceled)

78. (Currently Amended) A structure comprising ~~an interface between~~ a first material and a second material each of which comprises a polymer with the first material having an interface with the second material, the first material comprising a polymer-inorganic particle blend, wherein the blend comprises inorganic particles comprising metal nitride or metalloid nitride and wherein the inorganic particles have an average particle size of no more than about 1 micron.

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79. (Currently Amended) A structure comprising ~~an interface between~~ a first material and a second material each of which comprises a polymer with the first material having an interface with the second material, the first material comprising a polymer-inorganic particle blend, wherein the blend comprises inorganic particles comprising a metal/ metalloid compounds with a dopant and wherein the inorganic particles have an average particle size of no more than about 1 micron.

80. (Currently Amended) The structure of claim 78 wherein the first material and the second material are optical materials and wherein the two materials differ in values of index-of-refraction between each other by at least about 0.005 at infrared, visible or ultraviolet wavelengths.

81. (Currently Amended) The structure of claim 78 wherein the first material and the second material are optical materials and wherein the two materials differ in values of index-of-refraction between each other by at least about 0.1 at infrared, visible or ultraviolet wavelengths.

82. (Currently Amended) The structure of claim 78 wherein the polymer-inorganic particle blend has a non-linear optical response at infrared, visible or ultraviolet wavelengths.

83. (Previously Presented) The structure of claim 78 wherein the particle-inorganic particle blend comprises a polymer-inorganic particle mixture.

84. (Previously Presented) The structure of claim 78 wherein the particle-inorganic particle blend comprises a polymer-inorganic particle composite.

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85. (Previously Presented) The structure of claim 78 wherein the second material comprises a polymer-inorganic particle blend.

86. (Previously Presented) The structure of claim 78 wherein the first material comprises at least about 10 weight percent inorganic particles.

87. (Previously Presented) The structure of claim 78 wherein the inorganic particles comprise a metal nitride.

88. (Previously Presented) The structure of claim 78 wherein the inorganic particles comprise silicon nitride.

89. (Previously Presented) The structure of claim 78 wherein essentially no inorganic particles have a particle diameter greater than about four times the average particle diameter.

90. (Previously Presented) The structure of claim 78 wherein the inorganic particles have a distribution of diameters with at least about 95 percent of the primary particles having a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.

91. (Previously Presented) The structure of claim 78 wherein the polymer inorganic-particle blend comprises a polymer selected from the group consisting of polyamides (nylons), polyimides, polycarbonates, polyurethanes, polyacrylonitrile, polyacrylic acid, polyacrylates, polyacrylamides, polyvinyl alcohol, polyvinyl chloride, heterocyclic polymers, polyesters, modified polyolefins, polysilanes, polysiloxane (silicone) polymers, and copolymers and mixtures thereof.

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92. (Currently Amended) The structure of claim 79 wherein the first material and the second material are optical materials and wherein the two materials differ in values of index-of-refraction between each other by at least about 0.005 at infrared, visible or ultraviolet wavelengths.

93. (Currently Amended) The structure of claim 79 wherein the first material and the second material are optical materials and wherein the two materials differ in values of index-of-refraction between each other by at least about 0.1 at infrared, visible or ultraviolet wavelengths.

94. (Currently Amended) The structure of claim 79 wherein the polymer-inorganic particle blend has a non-linear optical response at infrared, visible or ultraviolet wavelengths.

95. (Previously Presented) The structure of claim 79 wherein the particle-inorganic particle blend comprises a polymer-inorganic particle mixture.

96. (Previously Presented) The structure of claim 79 wherein the particle-inorganic particle blend comprises a polymer-inorganic particle composite.

97. (Previously Presented) The structure of claim 79 wherein the second material comprises a polymer-inorganic particle blend.

98. (Previously Presented) The structure of claim 79 wherein the first material comprises at least about 10 weight percent inorganic particles.

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99. (Previously Presented) The structure of claim 79 wherein the inorganic particles comprise a metal oxide or a metal nitride.

100. (Previously Presented) The structure of claim 79 wherein the dopant comprises Ho, Eu, Ce, Tb, Dy, Er, Yb, Nd, La, Y, Pr, Tm, Bi, Sb, Zr, Pb, Li, Na, K, Ba, B, Ge, W, Ca, Cr, Ga, Al, Mg, Sr, Zn, Ti, Ta, Nb, Mo, Th, Cd, Sn or combinations thereof.

101. (Previously Presented) The structure of claim 79 wherein essentially no inorganic particles have a particle diameter greater than about four times the average particle diameter.

102. (Previously Presented) The structure of claim 79 wherein the inorganic particles have a distribution of diameters with at least about 95 percent of the primary particles having a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.

103. (Previously Presented) The structure of claim 79 wherein the polymer inorganic-particle blend comprises a polymer selected from the group consisting of polyamides (nylons), polyimides, polycarbonates, polyurethanes, polyacrylonitrile, polyacrylic acid, polyacrylates, polyacrylamides, polyvinyl alcohol, polyvinyl chloride, heterocyclic polymers, polyesters, modified polyolefins, polysilanes, polysiloxane (silicone) polymers, and copolymers and mixtures thereof.

104. (Previously Presented) The structure of claim 1 wherein essentially no inorganic particles have a particle diameter greater than about four times the average particle diameter.

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105. (Previously Presented) The structure of claim 1 wherein the inorganic particles have a distribution of diameters with at least about 95 percent of the primary particles having a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.

106. (Previously Presented) The structure of claim 1 wherein the inorganic particles have an average particle diameter of no more than about 100 nm.

107. (Previously Presented) The optical structure of claim 1 wherein the inorganic particles comprise a metal nitride or silicon nitride.

108. (Currently Amended) The structure of claim [[16]] 4 wherein essentially no inorganic particles have a particle diameter greater than about four times the average particle diameter.

109. (Currently Amended) The structure of claim [[16]] 4 wherein the inorganic particles have a distribution of diameters with at least about 95 percent of the primary particles having a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.

110. (Currently Amended) The optical structure of claim [[16]] 4 wherein the inorganic particles comprise a metal nitride or silicon nitride.